Beyond the Building

A new collaborative science building becomes a catalyst for the campus’ future.
VISION
With a focus on educating future science leaders, the University of San Francisco undertook the creation of a new interdisciplinary science building. Through a process rooted in the University’s traditions and values of inquiry and collaboration, the Lo Schiavo Center for Science and Innovation (LCSI) became the centerpiece of a strategic initiative to elevate USF’s presence as a leading academic institution.

BREAKTHROUGH
Thinking beyond the building to how the LCSI could contribute to the University’s broader mission and strategic goals led USF to locate the new facility in the heart of the campus on Harney Plaza. Site constraints prompted further innovations: the design integrates the 59,000-square-foot program with a transformed plaza and major campus pathways, bringing science education into day-to-day campus life.

VALUE
The LCSI’s prominent location and strong connection to Harney Plaza reinvigorate the University’s academic identity and strengthen its connections to alumni, institutions and businesses. Flexible, state-of-the-art laboratories, classrooms and informal learning areas are designed to catalyze interdisciplinary learning and easily accommodate innovations in curricula.

INSIGHT
Aligning the LCSI’s design with the University’s mission and values provided a mechanism for evaluating design and program decisions that extend the building’s value beyond fulfilling the immediate programmatic needs.
A New Campus Heart

Because the urban campus enjoys a dynamic context defined by dense residential neighborhoods and major thoroughfares, USF’s master planning principles were informed by a well-considered relationship between the campus academic identity and its residential context.

The final site was initially overlooked due to its many constraints. The design team reinvestigated its possibilities and ultimately introduced a garden level that integrates a significant program into a constrained site while also rejuvenating the student plaza.

By pulling the LCSI directly into the heart of the campus, adjacent to the very central but outdated Harney Plaza, the design transforms the campus core from an underused open space into a landscaped crossroads for interdisciplinary scientific inquiry. This critical move allows the LCSI to serve as more than just a new science building. It exemplifies the campus’ spirit of intellectual curiosity and social engagement and harnesses necessary support and funding from the USF community.

The site change also helped to secure the approval of neighbors who were concerned about new development along the campus edge.

Site Plan

The proposed high-rise building would have been incongruous with the adjacent low-rise residential area. The final approach is decidedly more neighborhood friendly.
Bringing Science Front and Center

To complement the surrounding campus, the Center for Science and Innovation is organized along newly introduced pathways that create a connection between the Campus Walk and the garden levels, which are located partly below the plaza.
Weaving the Campus Together

The initial master plan called for the LCSI to be located at the north side of the University Center. When NBBJ proposed moving the building to connect to the south and re-address the plaza, the advantages of sitting in a more prominent, central campus position made fitting a large program on a small site a creative challenge, not a deal breaker. Since the allowable area of the building footprint on the south side was smaller, the design team tucked half of the square footage below grade. The smaller, above-grade volume lets more natural light into the plaza.

To accommodate the program, a garden level was introduced. Carved through the middle of the plaza and planted with trees, it serves as a main pedestrian path through the campus. The “G” Level incorporates a full glass façade with translucent channel glass at the tiered classroom space. The façade lights the interior lobby and circulation spaces and allows a strong connection between the interiors and the exterior pedestrian plaza. The three-part strategy of cutting a canyon through the plaza, incorporating a glass façade and adding skylights over teaching labs creates the illusion of being at grade.

“In and of itself, Lo Schiavo Center is a refined work of architecture. It’s even better as part of something larger, and that’s the standard by which all urban buildings should be judged.”

—JOHN KING | ARCHITECTURE CRITIC, SAN FRANCISCO CHRONICLE
Taking a cue from the Jesuit spirit of inquiry and collaboration, the design team worked closely with USF science faculty and facilities managers to refine the LCSI’s program and vision. Through a series of interviews and meetings with key stakeholders, the client and design team revealed a high degree of consensus around seven core values that define the university, which acted as guiding principles for the new building.

These principles helped the client and design team evaluate different program elements, adjacencies and design strategies. Perhaps most importantly, the building’s original site along the northern edge of campus—which was close to residential areas—was found to be inconsistent with the University’s goal to invigorate science education at a campus-wide level.

By considering how the building will advance the University’s mission, enhance the campus and its larger community, and demonstrate a concern for humanity and the world, the client and design team shaped an innovative solution that supports each core value on multiple levels.
High-Performance Learning Environments

A: Program Distribution
Informal interaction areas dispersed among the classrooms respond to the teaching pedagogy of reflection, experience, and action. Spaces including the roof garden environmental lab and small-group gathering space at the exterior fire pit were strategically located to intersect students’ paths of travel.

37% OF SPACES DESIGNED FOR INTERACTION

B: Learning Optimization
Developed by USF faculty, the Kudlick interactive classroom incorporates a hybrid model through the use of tiered level workstations. These tiers allow for an interplay between formal lecture mode and informal, activity-based application mode, which increases retention of information.

80% INFORMATION RETAINED

144” FLOOR-TO-FLOOR VERTICAL CLEARANCE

C: Connection To Existing
Careful planning and placement of MEP systems achieved a transition between above-grade and below-grade levels of the new LCIS building and the existing Harney Hall building while still maintaining a 12” floor-to-floor vertical clearance.

D: Daylight Access
To counteract the feeling of an “underground” classroom, building systems are located below the floor to allow skylights to punch through the garden roof slab. This eliminates the need for electric light over central room workstations during daylight hours.

2,920 DAYLIT CLASSROOM HOURS PER YEAR

E: Campus Water Sourcing
To reduce strain on the city’s combined storm and sewer infrastructure, 100% of the rainwater falling on the site is filtered and captured within a 28,000 gallon cistern. The water is distributed to cooling towers across the campus to offset use of Hetch Hetchy water for non-potable purposes.

43% REDUCTION IN WATER CONSUMPTION

F: Energy Conservation
Program distribution and MEP system types were informed by the 12’ floor-to-floor constraints and the goal to provide an energy efficient set of solutions. The project is pursuing LEED-Gold certification.

42% SAVINGS FROM TITLE 24 BASELINE

PASSIVE VENTILATION
- Natural Ventilation
- Radiant Floor System

ACTIVE VENTILATION
- Type 1: Intensive Lab Space
- 100% Outside Air
- Type 2: Overhead/Displacement
- Type 3: Underfloor Air
“This building is the family room of the campus. It imparts a sense of place that makes legacy and tradition visible while engaging all other spaces on campus both visually and physically. Science is now lively, visible, engaging and exciting.”

—FR. THOMAS LUCAS S.J. | FOUNDING CHAIR OF THE FINE AND PERFORMING ARTS PROGRAMS AND DEPARTMENT OF ART AND ARCHITECTURE
Restoring a Region

An integrated design process included working with an ecologist to identify the unique components of the greater eco-region of the Bay Area, such as the Pacific Flyway, three open space parks located within 1 mile of the campus, wind patterns, and microclimates.

Habitat Refuge

Harney Plaza is transformed into a thriving, biodiverse natural environment where native plants and bird species co-exist. The landscape is designed as a passive system that filters storm water collected from the roof and channels it to a cistern for storage.

Learning Opportunities

The LCSI embraces the University’s commitment to environmental stewardship and social responsibility. The restored green space within the urban campus fosters a sense of interconnectedness and creates a variety of informal outdoor learning environments of various scales.
Changing the World From Here

The University of San Francisco upholds an academic tradition of educating future leaders who are committed to contributing to a better world. This has particular resonance in the Bay Area, where academic training and research can directly influence innovations in the biotechnology, health and environmental science industries that reverberate on a global scale.

With the number of graduate admission rates for medical and PhD-level programs at twice the national average, USF had specific goals for learning spaces: to revolutionize basic and translational sciences; germinate boundary-crossing curricula; expand student research with faculty; prepare all students for an increasingly technological world; provide critical biology training to nursing majors; and establish new collaborations between business programs and the sciences.

To support collaboration and to accommodate growth and curriculum shifts, the LCSI supports a variety of learning processes and scales. The design’s flexibility embraces the future of interdisciplinary science education while it also welcomes students and faculty into a long-standing and unique academic tradition.

“The big differentiator is that the building is 100 percent student space. There are no offices, no research labs—just classrooms—which allows us to speak to the primacy of teaching as part of our mission. It provides a real signal to both students and faculty that USF values science and that it is a strategic priority going forward.”

—CHRISTOPHER BROOKS | USF, ASSOCIATE DEAN, DEPARTMENT OF COMPUTER SCIENCE
“With universities around the country stressing research over teaching, we built a space that encourages both. The new Center for Science and Innovation allows faculty to bring students into the labs to enhance collaborative and interdisciplinary work. Every undergraduate is exposed to state-of-the-art science teaching and research facilities.”

— JENNIFER TURPIN | DEAN, COLLEGE OF ARTS AND SCIENCES
Because the university strongly believes that learning comes from engaging students in conversation rather than lecturing in a typical pedagogical style, professors and administrators created an innovative hybrid model—known as the Kudlick interactive classroom—and worked closely with the design team to refine the concept and bring it to fruition.

In the Kudlick classroom, which accommodates up to 28 students, teachers can deliver information in a more traditional style, then ask students to simply turn around to form smaller peer groups where they can immediately discuss and apply those ideas.

When designing all classroom spaces, attention was given to even the smallest details, including the housing of tech systems and computer infrastructure and air circulation. Students and teachers don’t hear air moving or computers humming, which allows them to focus their attention on what matters most—learning.

“Over the next few years, we’re going to discover more ways to use the building, and it’s going to change the way that we teach. The dialogue is going to become ‘How can we use this incredible space to do things that we’ve never thought of before?’ You can really see that the building’s design is driving new pedagogy.”

— CHRISTOPHER BROOKS | USF, ASSOCIATE DEAN, DEPARTMENT OF COMPUTER SCIENCE
Upper-level classrooms enjoy views of the quad and incorporate flexible spaces that allow students to easily break out into groups and work in a variety of ways. Outdoor spaces are also optimized for learning, and classes often make use of the native plants and grasses to incorporate hands-on learning.

USF’s unique educational approach emphasizes the benefits of providing a communal environment where students can learn from instructors—and one another—to become thoughtful global citizens. All classrooms are flooded with natural light to provide a vibrant learning experience.
A great deal of a student’s education takes place outside the classroom, so the LCSI team designed informal spaces to support casual learning in normally overlooked places.

Special attention was given to the LCSI’s furnishings and artwork, a welcome change for a science building, which are often sparsely decorated and stark.

The “family” room fireplace serves as a comfortable gathering spot for chats between faculty and students alike.
CLIENT
University of San Francisco

SIZE
59,000 sf

COMPLETION DATE
August 2013

NBBJ SERVICES
Full architectural design services, lab planning, lighting design and programming

SCOPE
Wet and dry teaching labs, general classrooms, auditorium and faculty break-out rooms, and support spaces, campus walk, plaza and landscape design

AWARDS
2014 ASLA NCC Award: Commercial and Institutional Design
ABOUT NBBJ

NBBJ is an award-winning global design and architecture firm focused on helping clients capitalize on the relationship between people and the design of physical space to enhance organizational performance.

From academic research and university medical schools to simulation centers and campus planning, NBBJ is a global leader in creating performance-based learning environments. Consistently recognized by clients for our creative and professional design process, NBBJ has partnered with 12 of U.S. News & World Report’s Top 25 Universities, including Harvard, Stanford, Duke and the University of Cambridge. Our expertise encompasses multiple disciplines, with architects, lab specialists, economists and sustainability experts working together to design innovative centers for learning.

NBBJ’s network of offices enables us to deliver quality projects that are regionally and locally appropriate. It allows us to act as a single creative force—leveraging the latest thinking from NBBJ colleagues in other locations, bringing a rich blend of expertise to each project.

NBBJ SERVICES

Architecture  Master Planning
Interior Design  Campus and Land-Use Planning
Change Management  Lighting Design
Construction Administration  Programming
Facility Planning  Project and Cost Management
Financial Analysis  Retail Planning and Design
Graphic Design and Signage  Space Planning
Laboratory Design  Workplace Consulting